REMARKS

After entry of this Amendment, claims 9-26 are pending in the application. Claims 25 and 26 have been added in this amendment. Claim 9 is amended. Claim 21 is amended to correct minor grammatical errors. Reconsideration of the application is requested.

Please note this Amendment is filed pursuant to the United States Patent and Trademark Office designating the emergency interruption in the service of the USPS beginning August 14, 2003 and is within the meaning of 35 U.S.C. § 21(a) and 37 C.F.R. 1.6(e).

In the Office Action dated April 14, 2003, claims 9-10, 12-15, 17-18 and 20-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schill et al. (U.S. Patent No. 5,884,357) in view of Egner-Wagner (GB 2145168) and claims 11 and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schill et al. The Examiner alleges that Schill et al. discloses a four-joint wiper arrangement for cleaning windows of vehicles; and that the wiper comprises a connecting rod 6 that is pivotally connected to a drive arm 5 at a first bearing point 11 and to a control arm 4 at a second bearing point 9. The Examiner further alleges that there is a hinged part 16 that connects the connecting rod to the wiper arm. The Examiner further states that the wiper blade is attached to the wiper arm thus, the spring force from the hinge causes the wiper blade to be pressed against the windshield. The Examiner admits that Schill et al. fails to teach a rolling contact bearing at the first bearing point and instead teaches a ball and socket joint. The Examiner further alleges that Egner-Walter teaches a connecting gear for a windshield wiper that comprises a deep-groove ball bearing 15, and that the outer ring 16 of the ball bearing is axially secured and held so that it does not rotate in a recess of the connecting rod. The Examiner further states that a pin 13 is fitted into the inner ring 14 of the ball bearing and is axially secured and non-rotatably held. With respect to claim 13, the Examiner states that the riveted bolts in Egner-Walter are secured by wobble riveting as well as the inner ring of the deep groove ball bearing (as the Examiner states as shown in Fig. 2). The Examiner further alleges that there is a flange in the middle region of the crank arm 10 and the connecting rod 11. The Examiner further alleges that Schill et

al. and Egner-Walter are analogous art because the references are from the same field of endeavor of windshield wipers. The Examiner states that at the time of the invention it would have been obvious to a person of ordinary skill in the art to use Egner-Walter's deep groove ball bearings in place of Schill et al.'s ball and socket joint. The Examiner further states that Egner-Walter teaches replacement ball and socket joints connected to drive member and the connecting rod with deep groove ball bearings because the bearings wear better and last longer as indicated on page 1, line 31-66. Therefore, the Examiner states that it would be obvious to combine Egner-Walter's deep groove ball bearing connection with Schill et al.'s ball and socket joint should get more life out of the joint connection.

The rejection of the aforementioned claims under 35 U.S.C. § 103(a) as being unpatentable over Schill et al. in view of Egner-Walter is traversed. The Applicant respectfully submits that, as explained in detail in the prior Office Action, the Examiner's reliance on the non-analogous art of Egner-Walter is inappropriate. The Egner-Walter reference is not analogous art and is not reasonably pertinent to the particular problem involved in the present invention. One skilled in the art of a four-hinged wiper arm would not search or have knowledge of a connecting gear for a drive motor. In Monarch Knitting Machinery Corp. v Sulzer Morat GmbH, 139 F.3d 877, 45 U.S.P.Q.2d 1977 (Fed. Cir. 1998), the Federal Circuit held that when applying the two-step test regarding analogous versus non-analogous art, which requires the examination of the field of the inventor's endeavor and the particular problem in which the inventor was involved, it is error to define "the problem in terms of the solution." The Egner-Walter reference discloses a connector gear for a crank arm of a drive motor. The Egner-Walter reference does not relate to a four-hinge wiper arm connection art, and is therefore outside of the inventor's field of endeavor. The Egner-Walter reference is not reasonably pertinent to the particular problem involved in the present application, since the present application is concerned with four-hinged wiper arm connections, while the Egner-Walter reference is concerned with the connector gears for a crank arm of a drive motor. Thus, claim 9-15, 17-18 and 20-23 are allowable over the prior art of record.

If the Egner-Walter reference is considered to be analogous art, it is respectfully submitted that the combination fails to teach or suggest the features of claims 9-15 that the rolling-contact bearing is a co-axial rolling-contact bearing. In Egner-Walter, the outer ring 16 of the grooved ball bearing 15 has an axis of rotation that is changed in relation to the axis of rotation of the inner ring 14 so that the control element 18 changes the position of the outer ring 16 in relation to a connecting rod 11 with the result that the position of the outer ring 16 in relation to the inner ring 14 is also changed by angle α as shown in Fig. 2. This results in a corresponding angle α for crankpin 13 as shown Fig. 2. In contrast, claim 9 includes a coaxial rolling-contact bearing 9, 11. Thus, the present invention provides at least one bearing point of a four-hinge wiper arm such that there is provided a non-play transmission of large radial and axial forces. Therefore, whereas the present invention provides a four-hinge wiper arm having non-play transmission of the large radial and axial forces, the grooved ball bearing in the connecting gear of Egner-Walter provides a movable outer ring in relationship to the inner ring to compensate the radial play in the grooved ball bearing. Thus, claim 9-15 are allowable over the prior art of record for this additional reason.

The cited art does not show or disclose the feature of claim 14 wherein the riveted bolt is secured by wobble riveting in a passage of at least one of the driving arm and control arm, and by wobble riveting at the inner ring of the rolling-contact bearing. The Examiner states that the riveted bolt is secured by wobble riveting, citing Figure 2, however the text of Egner-Walter does not mention wobble riveting, which is a specific type of riveting process. This is distinct from a "wobbling" joint as evidenced by the non-coaxial configuration on the crankpin 13.

The Examiner rejects claim 16 and claim 24 under 35 U.S.C. 103(a) as being unpatentable over Schill et al. in view of Egner-Wagner and further in view of Roodenburg (U.S. Patent No. 5,009,412). The Examiner states that although Schill et al. and Egner-Wagner fail to teach replacing the second bearing point 11, which is a universal joint, with a ball bearing, Roodenburg teaches that the ball bearings and universal joints are interchangeable and ball bearing joints are preferred since universal joints are more expensive. Therefore, the Examiner states that it would have been

obvious to one of ordinary skill in the art at the time the invention was made to apply Roodenburg's teachings that ball bearing joints are preferred over universal joints to Schill et al. in view of Egner-Wagner's invention. Further, the Examiner rejected claims 16 and 24 as being unpatentable over Schill et al. and Egner-Wagner and further in view of Young. The Examiner states that Young teaches that ball bearings are preferred over conventional simple bushings. The Applicants respectfully submit that Roodenburg and Young are non-analogous art. One skilled in the art of a four-hinged wiper arm would not search or have knowledge of the art related to an earthquake simulator or fishing reel main shaft isolation support system. Nor are these references reasonably pertinent to any problem confronted by one of skill in the relevant art. The specification on page 4, lines 6-8, states that deep groove ball bearings are a standard part already known in the technical world. However, there is no teaching or suggestion in the prior art to use such deep groove ball bearings in the art of four-hinged wiper arms. The problems of Roodenburg and Young are completely unrelated to the problems facing one of skill in the art of the instant application. Thus, claims 16 and 24 are allowable over the prior art, both by dependency from allowable claims, and because they contain unique features neither taught nor suggested by the prior art of record.

New claim 25 now requires that the bolt includes a radially protruding flange having one side resting against the inner ring and an opposite side resting against one of the drive arm and control arm. The advantages of the flange include that the flange provides a good support against the forces generated during the riveting process and provides proper spacing between the control arm and the driving arm or control arm. Further, the flange provides a stable connection of the riveted bolt to the deep groove ball bearing and the drive arm or control arm. This feature is not shown or disclosed in any of the prior art. Therefore, claim 25 is allowable.

New claim 26 includes the features of claim 9 before inclusion of the changes herein and includes the additional features of at least one of the first and second bearing points having an outer ring of a deep groove ball bearing secured in an axially-fixed, non-rotatable manner within a recess of the connecting rod, one end of a riveted bolt fixedly secured into a passage in at least one of the driving arm and the

control arm with an opposite end of the riveted bolt being connected non-rotatably to the inner ring of the deep groove ball bearing, such that the first and second bearing points provide non-play transmission of large radial and axial forces. In Egner-Walter, the outer ring 16 of the grooved ball bearing 15 has an axis of rotation that is changed in relation to the axis of rotation of the inner ring 14 so that the control element 18 changes the position of the outer ring 16 in relation to a connecting rod 11 with the result that the position of the outer ring 16 in relation to the inner ring 14 is also changed by an angle α as shown in Fig. 2. In contrast, the present invention discloses that at least one of the first and second bearing points have an outer ring of a deep groove ball bearing 11 secured in a recess of the connecting rod. The fit is structured so that the deep groove ball bearing is axially fixed in the recess and will not turn. One end of the riveted bolt 12 is fixedly secured into a passage 13 of the driving arm 4 or the control arm 5. The opposite ends of the riveted bolt are connected rotation tight to the inner ring of the deep groove ball bearing so that they do not rotate. The present invention provides at least one bearing point of a four-hinge wiper arm such that there is provided a non-play transmission of large radial and axial forces. Therefore, whereas the present invention provides a four-hinge wiper arm having non-play transmission of the large radial and axial forces, the grooved ball bearing in the connecting gear of Egner-Walter provides a movable outer ring in relationship to the inner ring to compensate the radial play in the grooved ball bearing. Thus, claim 26 is allowable over the prior art of record.

It is respectfully submitted that this Amendment traverses and overcomes all of the Examiner's objections and rejections to the application as originally filed. It is further submitted that this Amendment has antecedent basis in the application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the application. Reconsideration of the application as amended is requested. It is respectfully submitted that this Amendment places the application in suitable condition for allowance; notice of which is requested.

If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's Amendment, the Examiner is invited to contact the Applicants' attorney at the telephone number listed below.

Respectfully submitted,

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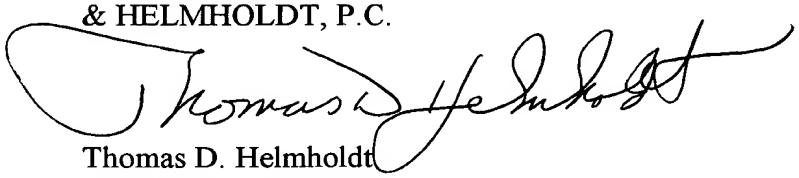

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